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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,012	01/12/2005	Jorg Bummerstedt	8033-841163	4857

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EXAMINER

SOTOMAYOR, JOHN B

ART UNIT PAPER NUMBER

3662

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/521,012	Applicant(s) BUMMERSTEDE, JORG	
	Examiner John B. Sotomayor	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-5, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) 6-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12JAN05</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings filed January 12, 2005 are acceptable.

### ***Preliminary Amendment***

2. The preliminary amendment filed January 12, 2005 has been entered and considered.

### ***Information Disclosure Statement***

3. The information disclosure statement filed January 12, 2005 has been entered and considered. An initialed copy of the PTO-1449 by the Examiner is attached.

### ***Priority***

4. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in Europe on June 4, 2003. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Wyschogrod et al ('932) or Blackman et al ('643) or Tsang ('358).

The claims are considered to be met by Wyschogrod et al ('932) or Blackman et al ('643) or Tsang ('358) who disclose, inter alia, a track association method whereby track data from an object are associated to the same object.

**Wyschogrod et al ('932)** disclose: Scan-to-scan correlation 92 associates objects with those present in previous scans. This enables tracks to be updated and new ones to be generated. Track association and lost-track recovery require additional information about the object.

The centroid, velocity, and the area of each object are stored in the tracks. The positions of objects from previous scans are projected to this scan and compared to the positions of the centroid of objects. The correlation is first performed for high-confidence tracks, then for "bad track drops," then for low-confidence tracks, and then for new tracks. If a projection is within a user-set distance of an object in the present scan, then the same track number is assigned to the new detection. If the present positions of several objects are within this user-selected distance of the projected track, then the track number is assigned to the object that is closest to the projected track position. Conversely, if several tracks project to within the user-selected distance from an object, then the track that is associated with the object is the one that projects

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closest to the object. The position, velocity, and the aspect graph of the objects in track are updated.

The track number can be transferred to another object if the return from the real object fades and there are other returns nearby that don't associate with the correct object, or there is a significant error in projecting the position of the object. The centroid jitter has a value of 1.3 m rms for objects moving in straight line. Because the image area of a turning object can rapidly change, the projection error is sometimes larger in that case. Because the centroid error is so small, the present system has a small probability of dropping or transferring track.

If an object in the present scan does not correlate with an object from previous scans, a new track is initiated. The track has a confidence level associated with it that expresses one's confidence that the object is indeed a real object and not clutter or multipath. The confidence level is determined by how far it has traveled since it was first observed. Presently the confidence level is binary, and its value is zero for a new track.

Even though the use of a lead-in does not adversely affect initial track acquisition, it can adversely affect reacquisition of tracks that are lost for one or several scans. Tracks can be lost because of shadowing, object breakup, or because the track is associated with a nearby multipath object. In a majority of cases this multipath object disappears after a scan or two, in which case the track does not associate with any nearby object. To recover from this situation, a special process has been implemented. If an object is in high-confidence track and is moving less than 50 m/sec, and was seen

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in the movement area in two out of the last three scans, and is not correlated with any object from the present scan, a "bad track drop" is declared. When this occurs the following steps are taken to reacquire the object: The object within this correlation distance that most closely matches the last cell observed of the object's aspect graph and does not associate with any high-confidence track is chosen as the new track position.

Longer-term improvements to the entire RSLs system may involve architectural changes. One such possibility is the integration of sensor fusion with ASDE scan-to-scan association. This would allow better ASDE track initiation for arrival aircraft, where the expected position, velocity, and other aircraft features can be derived from ARTS data. It may also help disambiguate tracks that may have been confused due to merged targets.

**Blackman et al ('643)** disclose: a multiple hypothesis tracking system (10) which generates a substantially continuous output to a system user. The multiple hypothesis tracking system (10) generates a primary set of tracks (12) which best represents the expected number of targets of interest in a cluster. For multiple sensor applications, a secondary set of tracks is generated having a less probability than the tracks in the primary set. A knowledge of track data is maintained from one scan to a subsequent scan such that tracks can be merged and deleted (14). A universal track file (16) is generated in which track associations from one scan to a subsequent scan are correlated such that the output of the track file remains consistent with respect to the number of tracks.

**Tsang ('358)** disclose: an apparatus and computer-implemented method of determining a probability that a first track and a second track represent the same physical object. The apparatus and method through track data processing determine the probability that the first track and the second track represent the same physical object from the first probability value and the second probability value.

***Allowable Subject Matter***

7. Claims 6-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

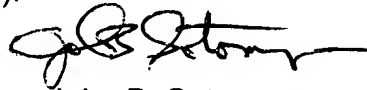
***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited prior art show various tracking systems.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Sotomayor whose telephone number is 571-272-6978. The examiner can normally be reached on Monday to Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom H. Tarcza, can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "John B. Sotomayor", with a stylized flourish at the end.

John B. Sotomayor  
Primary Examiner  
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